CREVIS

User Manual

FnIO S-Series

Analog Output Module

List of revisions

No.	Date	Version	Revision
1	2007.12.15	1.00	created

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1. Product Specifications

1) Environment Specifications

Item		Specifications	Remarks
Temperature	Operating	0℃ to +60℃ (32°F to 140°F)	
	Storage	-40℃ to +85℃ (-40°F to 185°F)	
Humidity	Operating	5 to 90% RH (Non-condensing)	
	Storage	5 to 90% RH (Non-condensing)	
Operating Altitude		2,000m	
Mounting		DIN Rail	

2) General Specifications

Item		Specifications	Remarks
Wiring I/O Cable		Max. 2.0m^2, AWG 14	
Shock Operating		10G	
Shock Non-Operating		30G	
Vibration/Shock Resistance	Displacement	0.012 Inch p-p from 10~57Hz	
	Acceleration	2G's from 57~500Hz	
	Sweep Rate	1 octave per Minute	
	Axes to test	X, Y, Z	
	Frequency Sweep per Axis	10	
EMC		Confirms to EN-61000-6-2	
EMI		Confirms to EN-61000-6-4	
Installation Pos. / Protect. Class		Variable / IP20	
Certifications		UL, cUL, CE	

2. Current Output Module

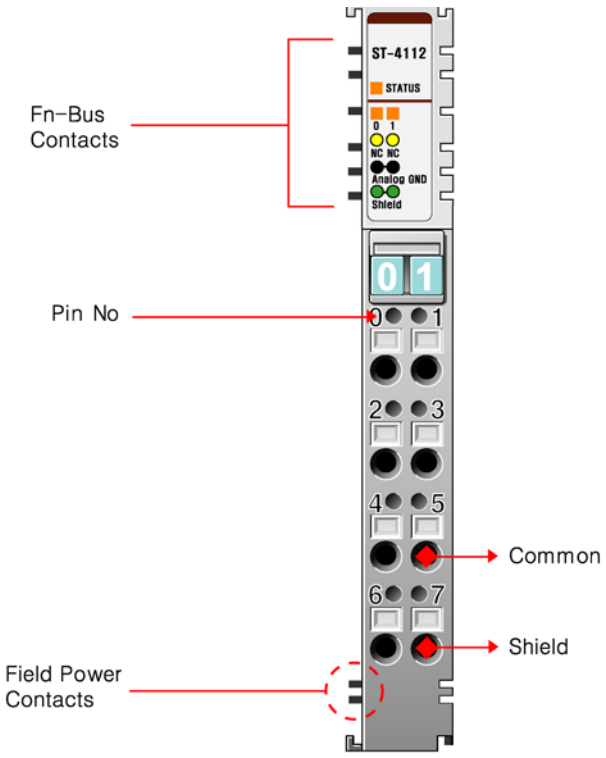
Description

- ST-41xx, ST-42xx and ST-49xx series output the standardized 0~20mA, 4~20mA and 0~1A of current value as a signal.
- It has 2~3 LEDs for status. One is for FnBus, the other are for Field Device status.
- Each output channel is electrically isolated and has distribution capability of 12bit.
- The conversion time of Analog Signal transferred from Field Device is 2ms each for all channels.
- It is isolated between Field I/O and FnBus by using Photo-coupler.
- It is operated regardless of Field Power supply. When the supplied Field Power has changed, absolutely the Expansion Field Power Supply (ST-7241) must be used.

1) ST-4112

- 0~20mA 2 channels Current Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Analog Output Channel 0 Low Byte							
Byte1	Analog Output Channel 0 High Byte							
Byte2	Analog Output Channel 1 Low Byte							
Byte3	Analog Output Channel 1 High Byte							

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Output Module Data
- 2Channels Output Data

Analog Output Channel 0
Analog Output Channel 1

◆ **Specification**

Output Specification	
Outputs per Module	2 Channel Single Ended
Indicators	2 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 4.8㎂/bit
Output Current Range	0 ~ 20mA
Data Format	16bit Integer(2's compliment)
Module Error	±0.1% Full Scale @ 25 ˚C
	±0.3% Full Scale @ 0 ˚C, 60 ˚C
Load Resistance	Max. 500ohm
Conversion Time	2msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	2 Channel / 1 COM
Module Specification	
Power Dissipation	Max. 60mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ **Status LED Description**

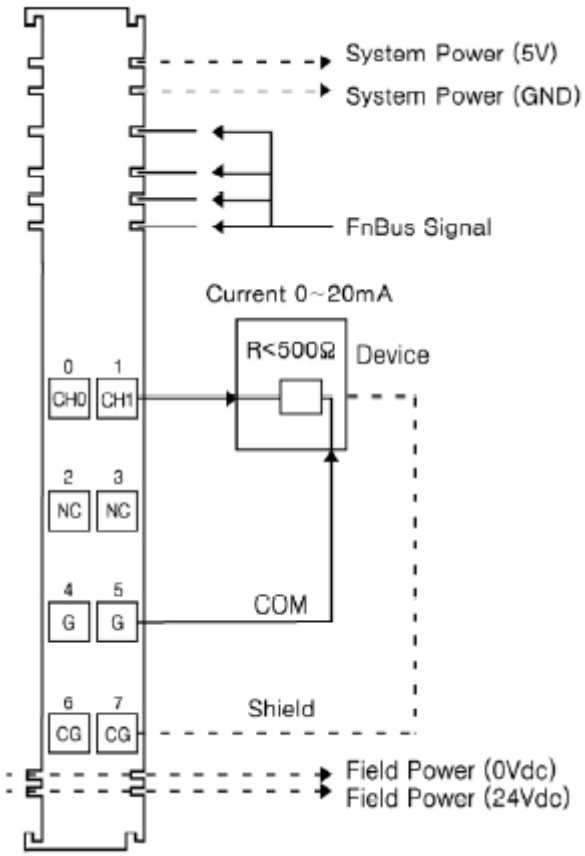
- Expansion Module Status LED

State	LED is	To Indicate
Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ Module Wire Diagram



- Wiring Description

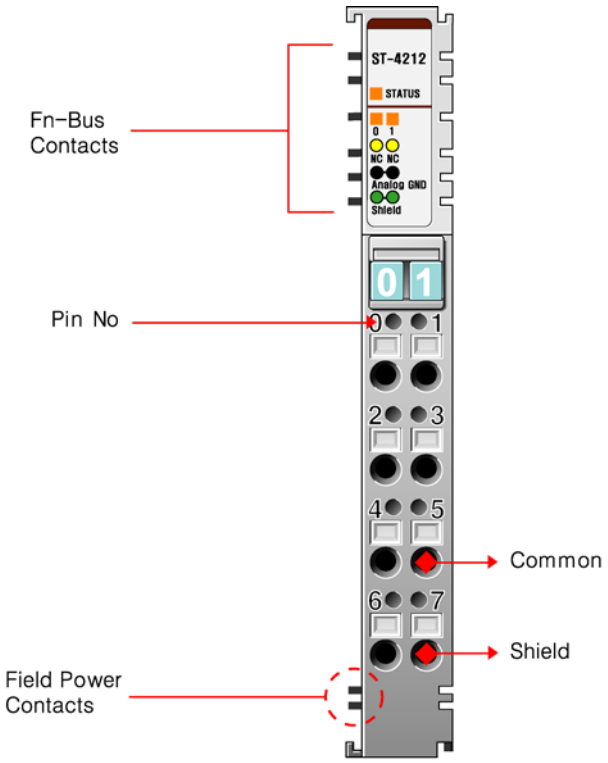
Pin No.	Description	Pin No.	Description

0	Output Channel 0	1	Output Channel 1
2	NC	3	NC
4	Output Channel Common (0V)	5	Output Channel Common (0V)
6	Chassis Ground / Shield	7	Chassis Ground / Shield

2) ST-4212

- 4~20mA 2 channels Current Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Analog Output Channel 0 Low Byte							
Byte1	Analog Output Channel 0 High Byte							
Byte2	Analog Output Channel 1 Low Byte							
Byte3	Analog Output Channel 1 High Byte							

Output Module Data
- 2Channels Output Data

Analog Output Channel 0
Analog Output Channel 1

◆ **Specification**

Output Specification	
Outputs per Module	2 Channel Single Ended
Indicators	2 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 3.9㎂/bit
Output Current Range	4 ~ 20mA
Data Format	16bit Integer(2's compliment)
Module Error	±0.1% Full Scale @ 25 ˚C
	±0.3% Full Scale @ 0 ˚C, 60 ˚C
Load Resistance	Max. 500ohm
Conversion Time	2msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	2 Channel / 1 COM
Module Specification	
Power Dissipation	Max. 60mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ **Status LED Description**

- Expansion Module Status LED

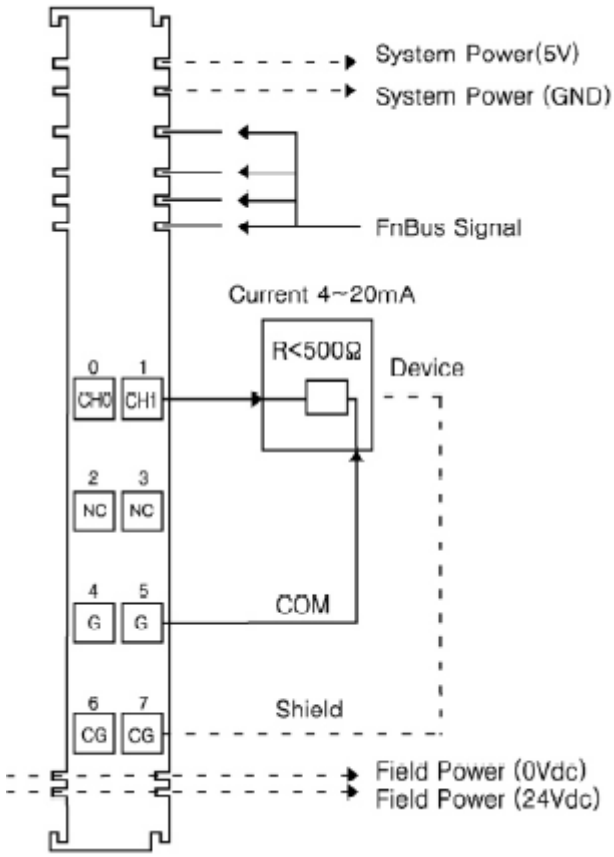
State	LED is	To Indicate

Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ Module Wire Diagram



- Wiring Description

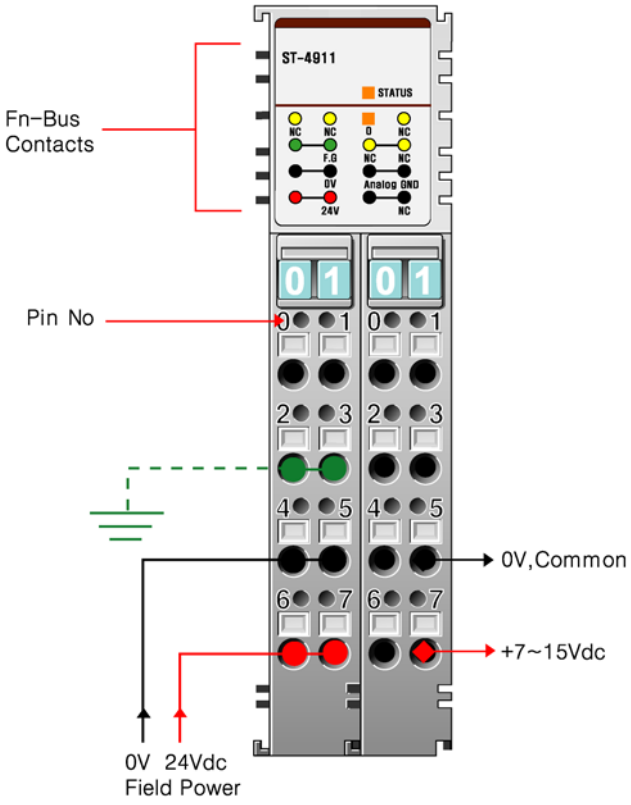
Pin No.	Description	Pin No.	Description
0	Output Channel 0	1	Output Channel 1
2	NC	3	NC

4	Output Channel Common	5	Output Channel Common
6	Chassis Ground / Shield	7	Chassis Ground / Shield

3) ST-4911

- 0~1A 1 channels Current Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0

Byte0	Analog Output Channel 0 Low Byte
Byte1	Analog Output Channel 0 High Byte

Output Module Data
- 1Channel Output Data

Analog Output Channel 0

◆ **Specification**

Output Specification	
Outputs per Module	1 Channel Single Ended
Indicators	1 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 0.244mA/bit
Output Current Range	0 to 1A
Data Format	16bit Integer (2's compliment)
Module Error	1% Full Scale @ 25 ˚C
	3% Full Scale @ -20 ˚C, 60 ˚C
Load Resistence	13ohm, ±5%
Conversion Time	1msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	1 Channel / 1 COM
Module Specification	
Power Dissipation	Max. 60mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ Status LED Description

- Expansion Module Status LED

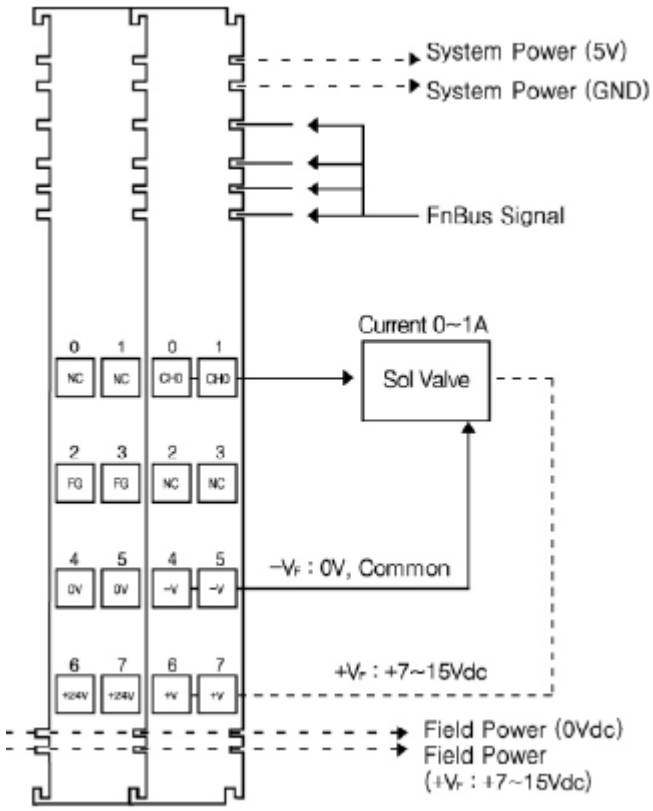
State	LED is	To Indicate

Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ Module Wire Diagram



- Wiring Description

Signal for Left Terminal

Pin No.	Description	Pin No.	Description

0	NC	1	NC
2	FG	3	FG
4	Field Power (0V)	5	Field Power (0V)
6	Field Power (+24Vdc)	7	Field Power (+24Vdc)

Signal for Right Terminal

Pin No.	Description	Pin No.	Description
0	Output Channel 0	1	Output Channel 0
2	NC	3	NC
4	Field Power (0V), Common	5	Field Power (0V), Common
6	Field Power (7~15Vdc)	7	Field power (7~15Vdc)

3. Voltage Output Module

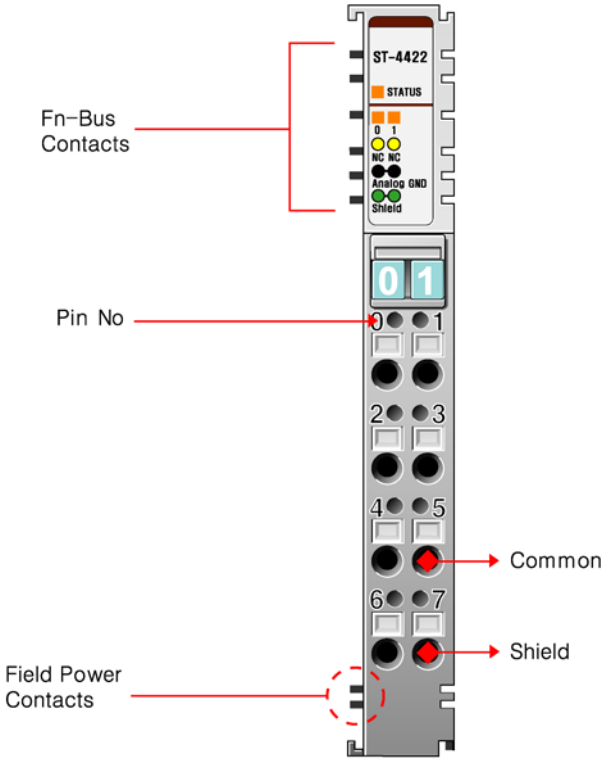
Description

- ST-44xx ,ST-45xx and ST-46xx series output the standardized 0~10V, -10~10V and 0~5V of voltage value as a signal.
- It has 3 LEDs for status. One is for FnBus, the other are for Field Device status.
- Each input channel is electrically isolated and has distribution capability of 12bit.
- The conversion time of Analog Signal transferred from Field Device is 2ms each for all channel.
- It is isolated between Field I/O and FnBus by using Photo-coupler.
- It is operated regardless of Field Power supply. When the supplied Field Power has changed, absolutely the Expansion Field Power Supply (ST-7241) must be used.

1) ST-4422

- 0~10V 2 channels Voltage Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Analog Output Channel 0 Low Byte							
Byte1	Analog Output Channel 0 High Byte							
Byte2	Analog Output Channel 1 Low Byte							
Byte3	Analog Output Channel 1 High Byte							

Output Module Data
- 2Channels Output Data

Analog Output Channel 0
Analog Output Channel 1

◆ **Specification**

Output Specification

Outputs per Module	2 Channel Single Ended
Indicators	2 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 2.4mV/bit
Output Voltage Range	0Vdc to 10Vdc
Data Format	16bit Integer(2's compliment)
Module Error	±0.1% Full Scale @ 25 ˚C
	±0.3% Full Scale @ 0 ˚C, 60 ˚C
Load Resistance	Max. 5Kohm
Conversion Time	2msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	2 Channel / 1COM
Module Specification	
Power Dissipation	Max. 155mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ Status LED Description

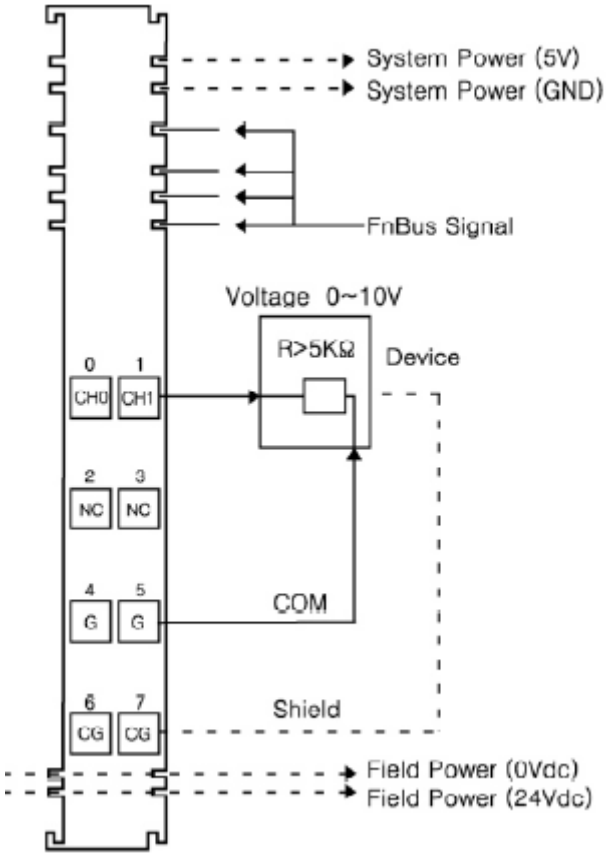
- Expansion Module Status LED

State	LED is	To Indicate
Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ Module Wire Diagram



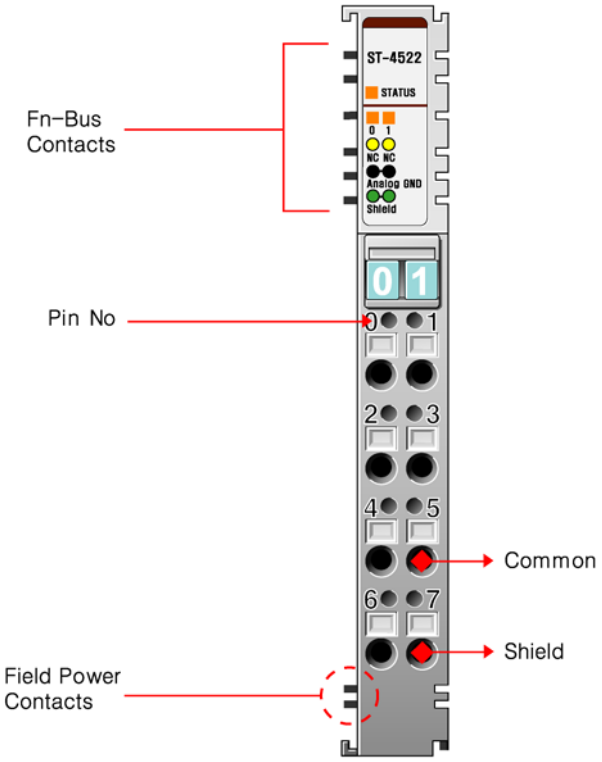
- Wiring Description

Pin No.	Description	Pin No.	Description
0	Output Channel 0	1	Output Channel 1
2	NC	3	NC
4	Output Channel Common(0V)	5	Output Channel Common(0V)
6	Chassis Ground / Shield	7	Chassis Ground / Shield

2) ST-4522

-10~10V 2 channels Voltage Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Analog Output Channel 0 Low Byte							
Byte1	Analog Output Channel 0 High Byte							
Byte2	Analog Output Channel 1 Low Byte							
Byte3	Analog Output Channel 1 High Byte							

Output Module Data
- 2Channels Output Data

Analog Output Channel 0
Analog Output Channel 1

◆ **Specification**

Output Specification	
Outputs per Module	2 Channel Single Ended
Indicators	2 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 4.8mV/bit
Output Voltage Range	-10Vdc to 10Vdc
Data Format	16bit Integer(2's compliment)
Module Error	±0.1% Full Scale @ 25 ˚C
	±0.3% Full Scale @ 0 ˚C, 60 ˚C
Load Resistance	Max. 5Kohm
Conversion Time	2msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	2 Channel / 1 COM
Module Specification	
Power Dissipation	Max. 155mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ **Status LED Description**

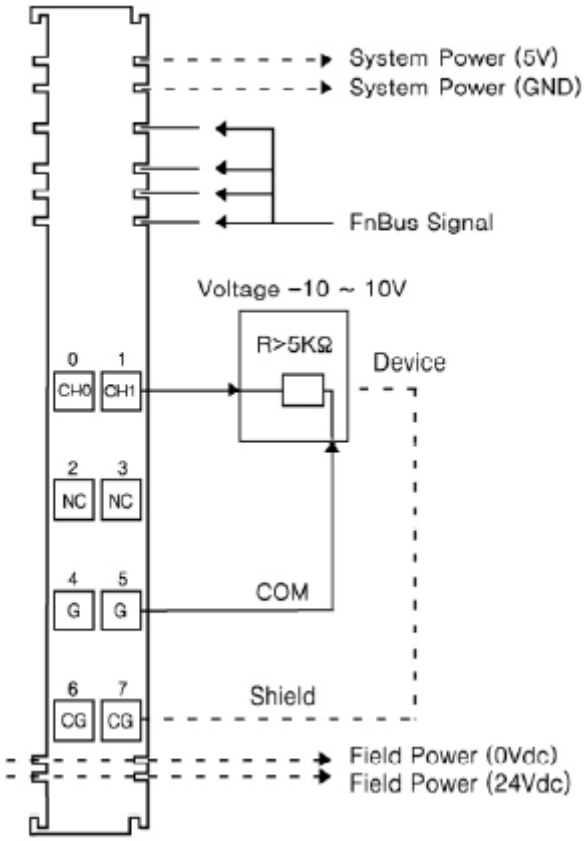
- Expansion Module Status LED

State	LED is	To Indicate
Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ **Module Wire Diagram**



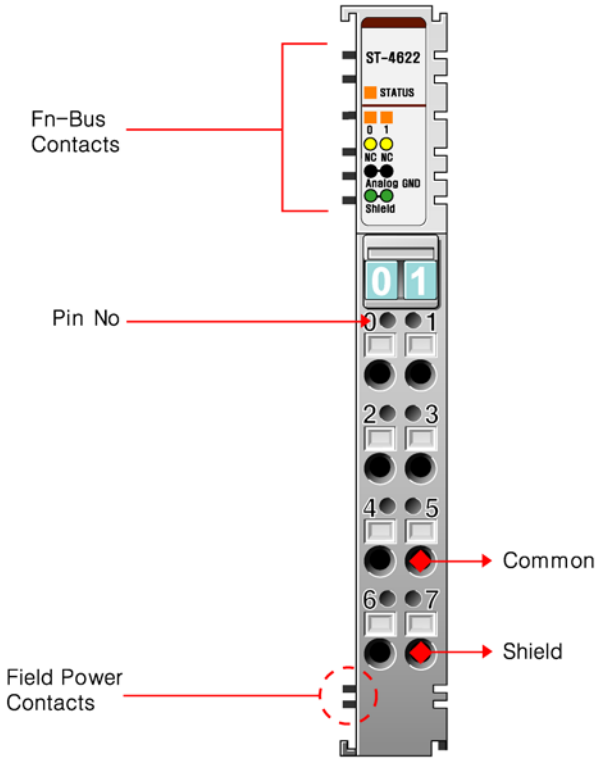
- Wiring Description

Pin No.	Description	Pin No.	Description
0	Output Channel 0	1	Output Channel 1
2	NC	3	NC
4	Output Channel Common(0V)	5	Output Channel Common(0V)
6	Chassis Ground / Shield	7	Chassis Ground / Shield

3) ST-4622

- 0~5V 2 channels Voltage Output Terminal Type, 12bits

◆ **Module View**



◆ **Mapping Data into the image table**

Output Module Data
Output Image Value

No.	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte0	Analog Output Channel 0 Low Byte							
Byte1	Analog Output Channel 0 High Byte							
Byte2	Analog Output Channel 1 Low Byte							
Byte3	Analog Output Channel 1 High Byte							

Output Module Data
- 2Channels Output Data

Analog Output Channel 0
Analog Output Channel 1

◆ **Specification**

Output Specification	
Outputs per Module	2 Channel Single Ended
Indicators	2 Green/Red Output State, 1 Green/Red FnBus State
Resolution	12Bits : 1.2mV/bit
Output Voltage Range	0Vdc to 5Vdc
Data Format	16bit Integer (2's compliment)
Module Error	±0.1% Full Scale @ 25 ° C
	±0.3% Full Scale @ 0 ° C, 60 ° C
Load Resistance	Max. 5Kohm
Conversion Time	2msec/All channel
Calibration	Not Required
Diagnostic	No
Common Type	2 Channel / 1 COM
Module Specification	
Power Dissipation	Max. 155mA @ 5.0Vdc
Isolation	I/O to Logic : Photo-coupler Isolation
	Field Power : Not Connected
Weight	70g
Size	12mm × 99mm × 70mm

◆ **Status LED Description**

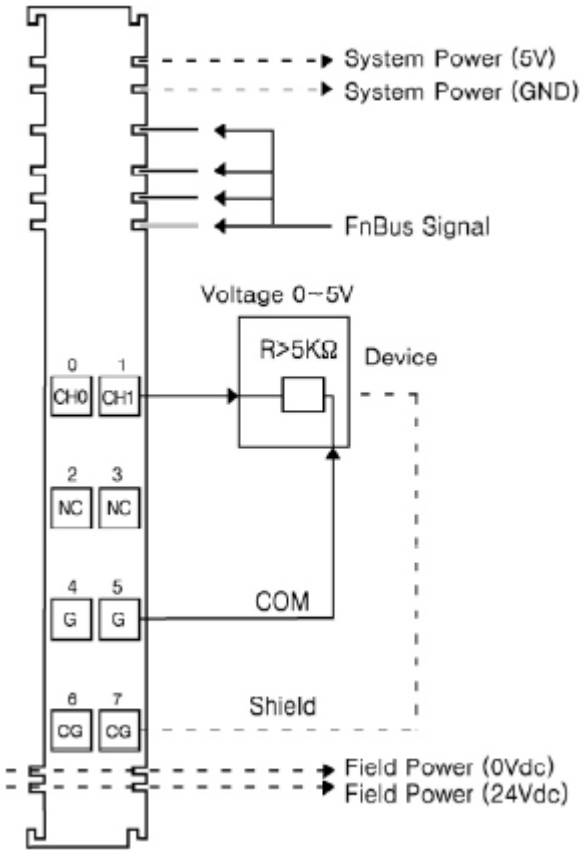
- Expansion Module Status LED

State	LED is	To Indicate
Not Powered	Off	Device has no expansion module or may be not powered
No Initialized		The parameter is not initialized yet
FnBus Connection	Green	FnBus normal operation
FnBus Ready	Flashing Green	FnBus ready
FnBus Fault	Flashing Red	FnBus time out
		FnBus failed communication
Device Fault	Red	Device fault

- Channel Status LED

Input Command	LED is	Description
Nominal	Green	Normal operation
Channel Fault	Red	Channel open

◆ **Module Wire Diagram**



- Wiring Description

Pin No.	Description	Pin No.	Description
0	Output Channel 0	1	Output Channel 1
2	NC	3	NC
4	Output Channel Common(0V)	5	Output Channel Common(0V)
6	Chassis Ground / Shield	7	Chassis Ground / Shield

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